JUL 7 1955

The Monthly Evening Sky Map

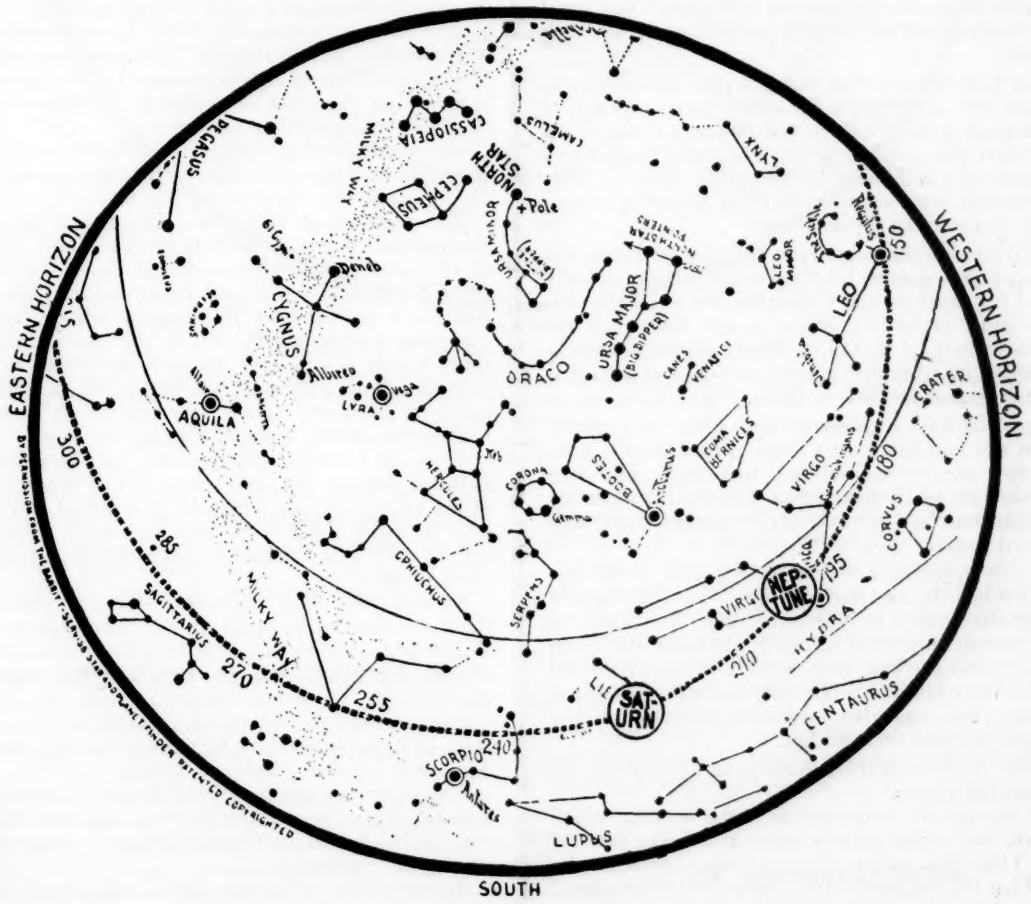
A JOURNAL FOR THE AMATEUR — FOUNDED BY THE LATE LEON BARRITT
— NORTHERN AND SOUTHERN HEMISPHERE —

ALSO A STAR, CONSTELLATION AND PLANET FINDER MAP
ARRANGED FOR THE CURRENT MONTHS - JULY - AUGUST - SEPTEMBER - MORNING AND EVENING - AND PRACTICALLY ANYWHERE IN THE WORLD PUBLISHED QUARTERLY

Largest Circulation of any Amateur Astronomical Journal in the World
Entered as second class matter, at Shohola, Pennsylvania, under the act of March 5, 1879

Vol. XLIX Whole No. 485 SHOHOLA, PA., JULY-AUGUST-SEPTEMBER, 1955 $2.00 PER YEAR 60 Cts. Per Copy

EVENING SKY MAP FOR JULY



AT 9:00 P.M., JULY 1 8:00 P.M., JULY 15 7:00 P.M., JULY 31

Face South and Hold the Map Overhead. The Top North and You Will See the Stars and Planets Just as They Appear in the Heavens. The Arrow Through the Two Stars in the Bowl of the Big Dipper Points to the North Star. The Star at the End of the Little Dipper.

This map is arranged specifically for Latitude 40 North—New York—but is practical for ten or fifteen degrees north or South of this latitude anywhere in the United States, the southern portion of Canada and the northern portion of Mexico and for corresponding latitude in Europe.

THE DATE BELOW EACH NUMERAL WILL SHOW WHEN THAT SECTION OF THE MAP WILL BE ON THE MERIDIAN—DUE SOUTH—AT 9 P.M. OR AN HOUR EARLIER FOR EACH NUMERAL WEST OF THIS DATE AND AN HOUR LATER FOR EACH NUMERAL EAST.

XUM

MAY 24, 1543: PUBLICATION ON THE DISCOVERY THAT THE EARTH MOVES

In the Polish city of Frauenburg, on May 24, 1543, the greatest scientist of the world lay dying. For weeks he had fought off death, by sheer will power; forcing his feeble old body to retain the breath of life until the dawn of the great day which should witness the crowning triumph of his career.

The dying man was Nikolaus Copernicus (or Kopernigk). He had begun life as a physician, and had then become a priest. He had won the love of the poor of his parish by giving them medical treatment free of charge, and by spending his scanty income lavishly for their benefit.

His joint labors as priest and doctor left him stray scraps of time to dabble in astronomy for his own amusement. And his studies of the heavens led to the greatest astronomical discovery of all the ages.

In those days it was supposed that the earth hung moveless in space and that the sun and the stars circled around it like spokes around a wheel's axle.

While Copernicus was still a child, a Genoese mariner had made himself the laughing stock of the scientific world by declaring that the earth was round, and that by sailing westward, a ship would eventually reach the East.

Up to that time it was thought that the earth was flat, and that somewhere far away, there was a real "jumping-off place." Then Columbus advanced his theory that the earth was a globe, and Copernicus later made the still more unbelievable discovery that the globe was not stationary, but was forever spinning through space at an amazing rate.

One great difference between the two scientists was that Copernicus proved his theory—and almost nobody believed his proof—while Columbus did not prove his theory—and everybody thought he did. Columbus did not "reach the East by sailing West." Instead, entirely by accident, he stumbled upon America, and died still believing he had landed in India.

Copernicus had a thousand difficulties to contend with. In the first place astronomical instruments such as we now use were absolutely unknown. The telescope was not to be discovered for another century, and Copernicus had to make all his observations with the naked eye.

The only appliances he had were rudely carved out of wooden boards; and their various lines were marked haphazardly, with ink. Nor were there any books to go by, except those that solemnly declared the earth stood still, and the sun, and moon, and stars revolved around it. So Copernicus not only had to begin at the beginning, but was also forced to unlearn all the astronomy he had ever studied.

In spite of these fearful drawbacks he worked out the following theory:

That the sun is a motionless body, around which the earth, and other planets move at varying rates of speed. That the moon above revolves around the earth. That the supposed "revolutions of the heavens," are caused by the rotation of the earth around its own axis. That the earth itself is not the center of the universe, but is a mere planet whose orbit is between Mars and Venus.

All this may seem trite and commonplace nowadays, but at that time it was the most astonishing theory ever put forth. Astronomers all over the world clamored for proofs and data. Copernicus refused to furnish them, until for long years, he had toiled and investigated, and from every angle had proved the truth of his theory beyond any shadow of doubt.

Then, when he was seventy, he wrote a book, telling the results of his studies, and describing every detail of his discovery, outlining his myriad proofs.

It was for the publication of this wonderful book that Copernicus kept himself alive. He yearned to live until the day the new Truth should be made known to the world.

On May 24, 1543, the epoch-making book was issued. The first copy of it was placed in the dying genius's hands. Long and lovingly Copernicus looked at the volume, then sank back dead.

AUGUST EVENING SKIES

August evening display for our delightful gaze many a star of great brightness and beauty and many an object of scientific interest.

High up in the sky, almost overhead, is the blue-white Vega, the most brilliant of all the stars of the northern hemisphere and second in the entire firmament only to the great dog star Sirius. Its rays resemble nothing so much as a great electric arc light.

Due to the phenomenon called by astronomers "the Precession of the Equinoxes" this great star will some day, approximately twelve thousand years, be our pole star, taking the place of Alpha Ursae Minoris which occupies that enviable post now.

No worthier than Vega can be found to mark the place about which the heavens turn and which guides the mariner and traveler on his way.

The distance of Vega from the earth is fairly well determined as twenty-nine light years, and the apex of the solar system, that is, the point in the heavens toward which the sun and its attending planets are rushing is not far from the position which Vega now occupies; fortunately for us, in the many million of years which it will take the sun and earth to reach that spot or its proximity the star will have obligingly removed itself out of the way and if we do collide with some cosmic body it will not be Vega.

Vega has a small companion star of about the eleventh magnitude. Between the next two brightest stars of the group Lyra, in which Vega is found and almost on a line with them in the famous Ring Nebula which can be well seen with a four-inch telescope in a clear atmosphere.

Several other first magnitude stars are visible: To the southwest, white Spica, in the constellation of the Virgin is preparing to set; to be soon followed by the reddish Antares in Scorpio, far off to the south near the horizon. Those two stars are about the same in magnitude but the difference in color is very noticeable. It is probably that Spica is a "young" star and Antares a regular graybeard among the stars.

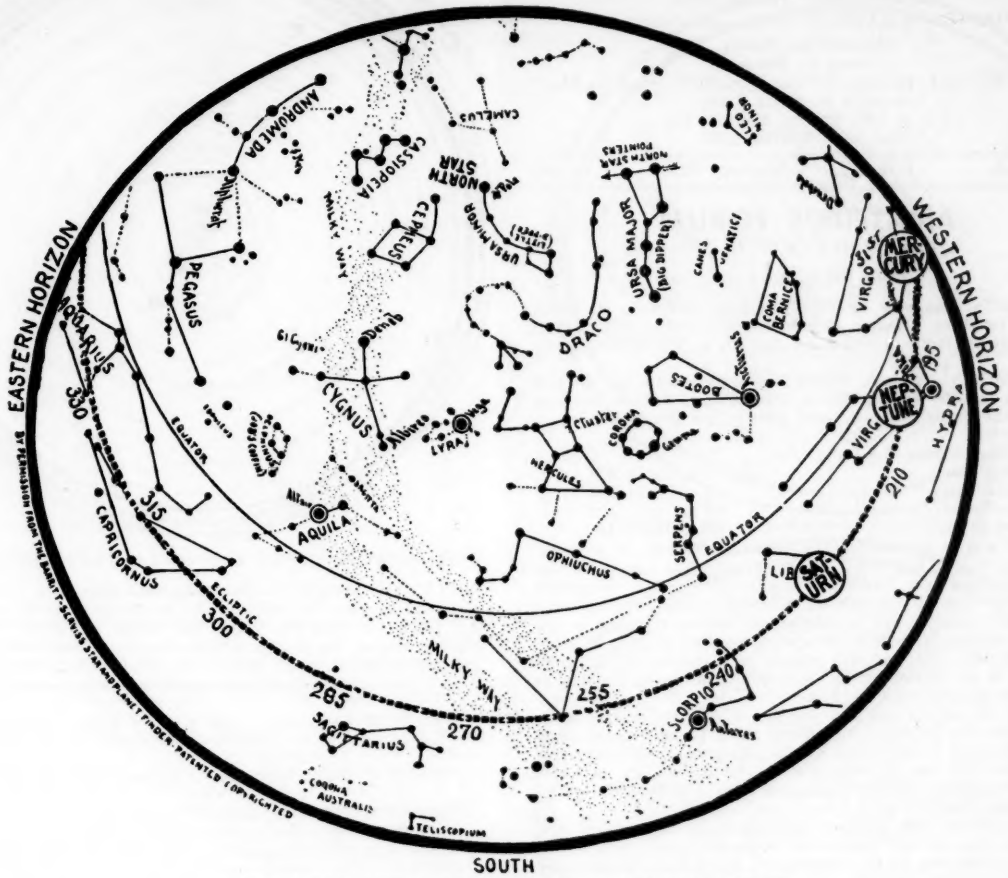
If you prolong the handle of the great dipper in its graceful curves you strike the star Arcturus which is next in brightness to Vega and Capella about to rise in the far northwest.

Arcturus is a yellowish star of particular interest because of its very great motion among the stars themselves, known as proper motion. It has changed its position as much as two degrees since the observation of the ancient Greek astronomers. This is remarkable because practically all the groups have remained exactly the same since the earliest records.

Southeastward of Vega is Altair, the bright luminary of the constellation Aquila, the Eagle.

In the east the great square of Pegasus is now well

AUGUST EVENING SKIES



AT 9:00 P.M.; AUG. 1; 8:00 P.M., AUG. 15; 7:00 P.M., AUG. 28

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above the horizon, as is also the constllation Andromeda followed immediately by Perseus with the demon star Algol, which changes its magnitude from the second to almost the fourth in the short space of nine hours, and does this every two and seven-eighths days.

"HOW FAR CAN A TELESCOPE SEE"

This is a question often asked. In order to give an approximate answer we must make certain assumptions.

A sixth magnitude star is the faintest celestial object visible to the naked eye. Now, it appears that the average sixth magnitude star is at a distance of about 357 light years, or say, in round numbers, 2,175 million-million miles.

Let us take that distance, then as representing the utmost range, in an astronomical sense, of the unaided eye.

A telescope with a one-inch object glass will show stars down to the ninth magnitude, but the average ninth magnitude star is about 1,000 light years distant or say 5,800,000,000,000,000 miles. Accordingly the "range" of the ine-inch telescope is more than two and a half times that of the naked eye. A ten-inch telescope will perceive stars down to the fourteenth magnitude, which carries the range up to 8,000 light years, or say 46,400,000,000,000,000 miles.

With a forty-inch telescope, like that of the Yerkes Observatory, the range goes up to 35,000 light years, reaching seventeenth magitude stars, and with the hundred-inch telescope of Mount Wilson, in California, the range should, theoretically, extend to stars of the nineteenth magnitude which are on the average 80,000 light years distant.

A light year is the distance which a ray of light, traveling with the known speed of 186,330 miles per second, would go in one year.

IN APPRECIATION

We scan the sky at evening time,
  And compare it with our map,
We watch Arcturus upward climb
  While Polaris takes a nap.
For the glorious "Suns of Night"
  Many care not a rap;
Not so here; 'tis our delight
  To find stars that's on Barritt's map.

Frank Baldwin

XUM

$2.00 Per Year. Postpaid in the United States
PUBLISHED QUARTERLY
Subscriptions received by Booksellers and Opticians everywhere
Canada $3.00 Foreign $3.00
MRS. LEON BARRITT, Editor and Publisher
Contributing Editor
Irving L. Meyer
Please make checks payable to "The Monthly Evening Sky Map"
Copyright by Maria Barritt
Box 3, Pike County, Shohola, Pa.
Telephone Milford 2310

Vol. XLIX July-August-September, 1955 No. 485

AMATEUR'S FORUM

By IRVING L. MEYER, M.S.

JULY 1955

THE SUN: has now passed the highest point in its climb into the northern heavens. It moves from Gemini into Cancer, and is farthest from the earth on the 4th at 94.4 million miles distance.

THE MOON: is most remote from the earth (at apogee) twice this month—on the 2nd at a distance of 252,000, and the 29th at the same distance; it is closets (perigee) the 17th at 224,000 miles.

The Moon's Phases (E.S.T.):

Full Moon	July 5 at 12:38 AM
Last quarter	12 at 3:31 PM
New Moon	19 at 6:34 AM
First quarter	26 at 10:59 AM

MERCURY: is a morning sky object all month. It is found in Taurus at the beginning of the month, but moves rapidly through Gemini into Cancer. It reaches its greatest elongation west of the Sun on the 9th so that, for a relatively few days around this date, it will be observable low in the east in the predawn twilight. It will be somewhat brighter than a standard first magnitude star, and will appear as a crescent in the telescope. It is 64 million miles away from the earth the 1st, as against 120 million miles the 31st.

VENUS: is also in the morning sky all month, and in addition is close to Mercury the entire time. It also moves from Taurus through Gemini into Cancer. It is not well placed for observation, but can be seen low in the eastern sky as dawn breaks. Geocentric distance increases from 152 to 158 million miles during July.

MARS: moves from Gemini into Cancer as an evening star, but is too close to the Sun to be observable. It is now so far from the earth that in the telescope it appears about the same size as Uranus. Distance the 1st is 242 million miles; the 31st is 247 million miles.

JUPITER: is another member of the Cancer area planets. Too close to the Sun all month to be observable, it remains an evening sky object.

Distance the 15th is 583 million miles.

SATURN: is one of the two readily visible planets for the month. It holds forth in Libra, and sets at around midnight. A bright object, it is particularly enjoyable when seen in the telescope. With even moderate magnification, its great ring system can be examined. At the middle of the month its magnitude is 0.7, ring diameter 40", and distance 880 million miles.

URANUS: on the Gemini-Cancer boundary, is in conjunction with the Sun on the 21st, thereupon entering the morning sky. It is too close to the Sun all month to be observable. Greatest geocentric distance, 1824 million miles, occurs on the 21st.

NEPTUNE: is in Virgo all month, near Spica. It sets about an hour before Saturn. It is a faint object, not visible to the naked eye. In the telescope, moderate magnification will reveal its pinpoint disc.

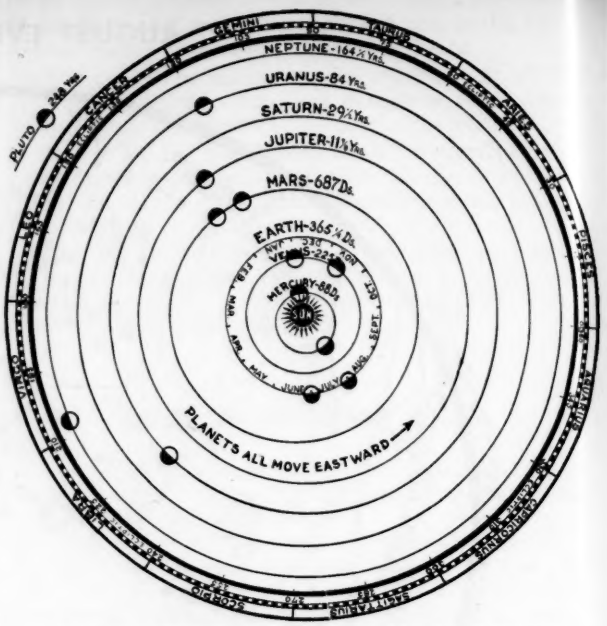
Distance the 15th is 2809 million miles.

PLANETARY CONFIGURATIONS

Eastern Standard Time

JULY 1955

July	3— 1:00 PM	Mercury greatest heliocentric latitude south
	4— 5:00 PM	Earth in aphelion
	6—10:00 AM	Conjunction, Marcs and Uranus; Mars north 0° 38′
	8— 6:00 AM	Neptune stationary in Right Ascension
	9— 6:00 AM	Mercury greatest elongation west, 21° 10′
	12— 3:00 PM	Venus in ascending node
	17—10:45 PM	Conjunction, Mercury and Moon; Mercury south 0° 5′
	18— 9:41 AM	Conjunction, Venus and Moon; Venus north
	18— 5:00 PM	Quadrature, Neptune and Sun
	19—10:40 AM	Conjunction, Uranus and Moon; Uranus north 3° 23′



Orbits and Heliocentric Movements of the Planets for July

NOTE: The planets are shown in their respective orbits. Two positions, one for the first, and one for the last day of the month, are given for Mercury, Venus and Mars. The arrow indicates the last day of the month, Jupiter, Saturn, Uranus and Neptune are shown in the mean position for the current month.

	19—10:00 PM	Saturn stationary in Right Ascension
	20—12:13 AM	Conjunction, Mars and Moon; Mars north 4° 41′
	20— 3:40 AM	Conjunction, Jupiter and Moon; Jupiter north 4° 14′
	21— 8:00 AM	Conjunction, Uranus and Sun
	22— 2:00 PM	Mercury in ascending node
	24— 5:00 PM	Conjunction, Mars and Jupiter; Mars north 0° 37′
	26— 1:17 AM	Conjunction, Neptune and Moon; Neptune north 6° 35′
	27— 5:00 AM	Mercury in perihelion
	27— 1:38 PM	Conjunction, Saturn and Moon; Saturn north 5° 51′
	27— 8:00 PM	Conjunction, Mercury and Venus; Mercury north 0° 20′
	29— 5:00 PM	Conjunction, Mercury and Uranus; Mercury north 0° 41′
	31— 2:00 AM	Conjunction, Venus and Uranus; Venus north 0° 12′

AMATEUR'S FORUM

By IRVING L. MEYER, M.S.

AUGUST 1955

THE SUN: moves from Cancer into Leo, and by the end of the month has dropped considerably toward the equator. On the 1st it is 94.3 million miles away, and on the 31st, 93.8 million miles.

THE MOON: is at perigee (closest) the 14th at a distance of 227,000 miles, and is at apogee ((farthest) the 26th at 251,000 miles.

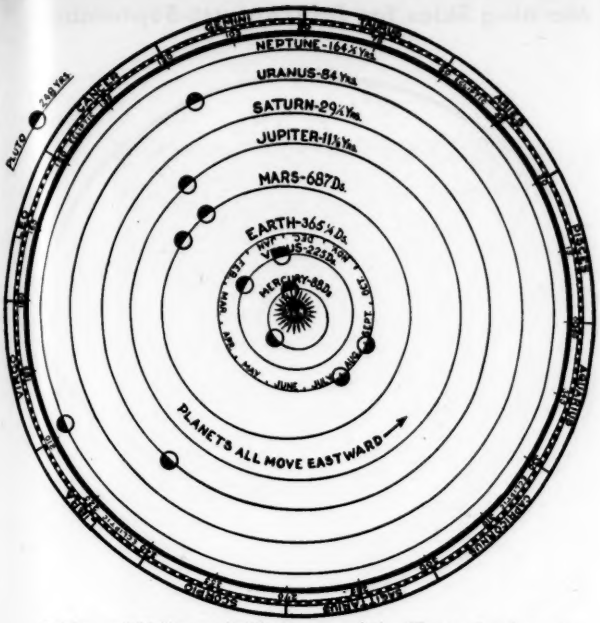
The Moon's Phases (E.S.T.):

Full Moon	August 3 at 2:30 PM
Last quarter	10 at 9:33 PM
New Moon	17 at 2:58 PM
First quarter	25 at 3:51 AM

MERCURY: is in Superior Conjunction with the Sun on the 5th, and so enters the evening sky. However, it is too close to the Sun all month to be observable. It moves from Cancer, through Leo, into Virgo. Mercury is farthest from the earth the 9th at 126 million miles.

VENUS: travels from Cancer into Leo, too close to the Sun all month to be observable. It is still a morning sky object. It reaches greatest distance from the earth the 29th at 161 million miles.

MARS: also moves from Cancer into Leo. On the 16th, it is in superior conjunction with the Sun, thereupon entering the morning sky. Too close to the Sun all month to be observable.



Orbits and Heliocentric Movements of the Planets for August

Greatest geocentric distance occurs on the 18th at a distance of 249 million miles.

JUPITER: is in conjunction with the Sun the 4th, and enters the morning sky. It is in Cancer all month, too close to the Sun to be observable. Greatest distance, 587 million miles, is reached the 5th.

SATURN: sets before midnight from a point in Libra. An evening sky object, it is still pretty well placed for observation. To the naked eye it will appear somewhat brighter than the nearby star, Spica. It is 927 million miles away the 15th.

URANUS: is in the morning sky in Cancer, but by reason of its faintness and proximity to the Sun, is not observable. Distance the middle of the month is 1816 million miles.

NEPTUNE: sets early in the evening from a point in Virgo. Invisible to the naked eye, it is becoming an increasingly difficult object to observe as the Sun closes in on it. It is 2856 million miles away the 15th.

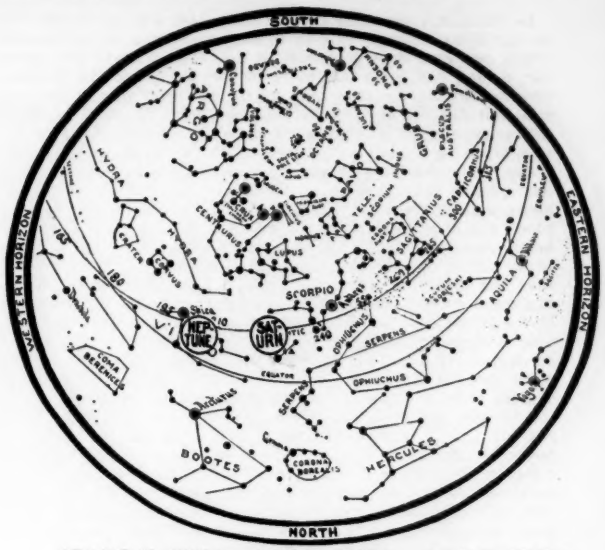
PLANETARY CONFIGURATIONS

Eastern Standard Time

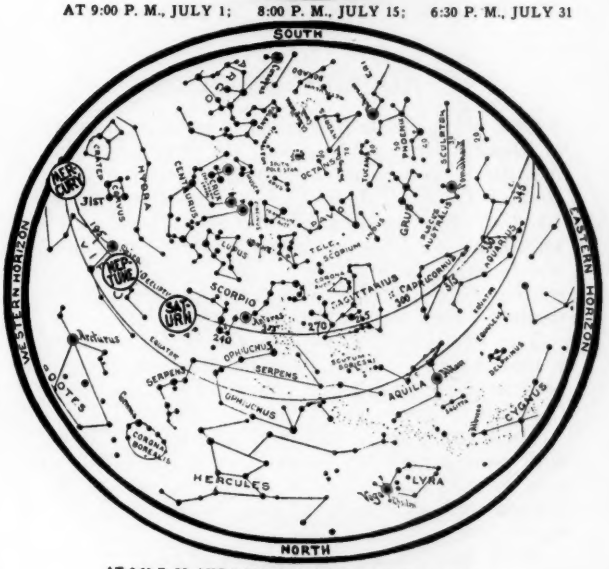
AUGUST 1955

Aug.	4— 1:00 AM	Conjunction: Jupiter and Sun
	4— 6:00 PM	Conjunction, Mercury and Jupiter; Mercury north 1° 10′
	5—Noon	Superior conjunction, Mercury and Sun; Mercury north 1° 43′
	6—Noon	Mercury greatest heliocentric latitude north
	7— 7:00 AM	Mars greatest heliocentric latitude north
	7—10:00 PM	Quadrature, Saturn and Sun
	7—11:00 PM	Conjunction, Mercury and Mars; Mercury north 0° 39′
	11—Noon	Conjunction, Venus and Jupiter; Venus north 0° 30′
	15— 7:00 AM	Venus in perihelion
	15—11:00 PM	Conjunction, Uranus and Moon; Uranus north 3° 33′
	16—10:00 PM	Conjunction, Mars and Sun
	17—12:05 AM	Conjunction, Jupiter and Moon; Jupiter north 4° 43′
	17—10:59 AM	Conjunction, Venus and Moon; Venus north 5° 46′
	17— 6:04 PM	Conjunction, Mars and Moon; Mars north 5° 56′
	18— 7:19 PM	Conjunction, Mercury and Moon; Mercury north 6° 40′
	20— 1:00 AM	Conjunction, Pluto and Sun
	22—10:21 AM	Conjunction, Neptune and Moon, Neptune north 6° 19′
	23— 6:00 PM	Conjunction, Venus and Mars; Venus north 0° 11′
	23—11:09 PM	Conjunction, Saturn and Moon; Saturn north 5° 26′
	29—10:00 PM	Mercury in descending node

Evening Sky Southern Hemispheres



AT 9:00 P. M., JULY 1; 8:00 P. M., JULY 15; 6:30 P. M., JULY 31



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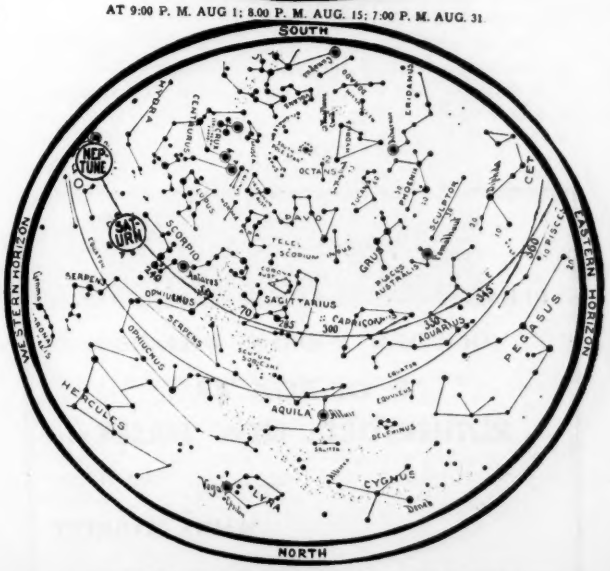


AT 9:00 P.M. SEPT. 1; 8:00 P.M. SEPT 15; 7:00 P.M. SEPT 30

XUM

RISING AND SETTING OF THE STARS

In constantly speaking of the rising and setting of the stars we are likely to forget that there are certain stars in the heavens which owing to their proximity to the celestial north pole never rise or set, but are continually in the sky above the horizon, obscured in the day-time only by the powerful rays of the sun. It is not difficult to form an idea of the causes which underlie this phenomenon. The cause of the daily general rising of the stars is, as we know, the rotation of the earth on its axis once a day. This rotation produces an apparent rotation of the celestial sphere, causing stars to be below the horizon at certain hours and above at others. Now this rotation seems to take place about an axis which is the line joining the north and south celestial poles. Thus each star passes daily over a circle whose center lies on this imaginary line. We might almost say that the center of all these circles is the pole itself. This is not quite correct, but easy to visualize for circles not far from the pole itself with which we are now concerned. The north pole is elevated above the horizon at New York by as much as 40 degrees almost half way from the horizon to the zenith, or point directly above overhead. If then a star is less than 40 degrees from the celestial north pole its circle will not touch the horizon and it can therefore at the time be below the horizon, or set. If it were not for the blotting out of their less powerful rays by the sun we would see them performing their complete daily circle. Similarly there are stars about the celestial south pole whose nearness to that pole prevents them from ever rising above their horizon to our view. The constellations which never set are Cassiopeia, Draco, the Small Bear, Capheus, and the dipper part of the Great Bear constellation.

AUGUST METEORS

One of the most important "showers" of meteors, or shooting stars, occurs on the 10th and 11th of August. Its center of radiation is from the constellation of Perseus, which rises in the northeast about 10 P.M. They are called "Perseides" and are also known as the "Tears of St. Lawrence." One should watch until midnight for these meteors, and an attentive observer is sure to see several and perhaps many, in the course of an hour.

The generally accepted theory regarding meteors is that they were originally parts of comets that have become disintegrated and are moving about in space in orbits of every conceivable direction.

These enter the atmosphere enveloping the earth with more or less frequency, and are ignited by friction as they pass through it, and in the main are burned up, but occasionally one passes through and reaches the earth.

Many interesting specimens are to be found in the principle museums of the world.

The atmosphere enveloping the earth is estimated to reach a height of 100 miles, Meteors are seen first it is estimated at a height of 75 miles and disappear at a height of 55 miles.

NOTICE

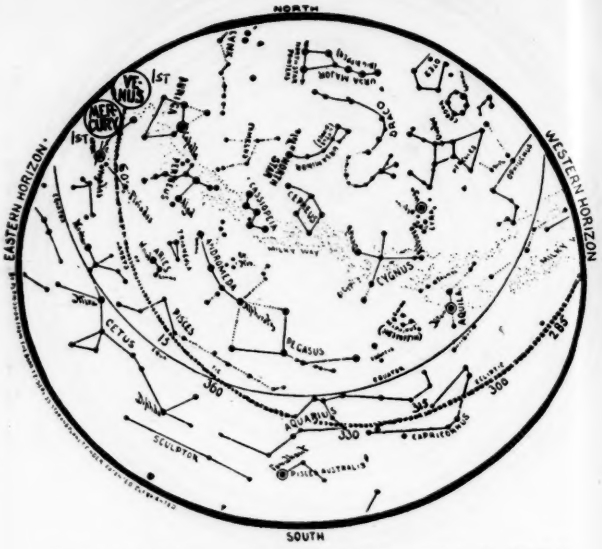
PLEASE NOTE THAT AFTER THIS ISSUE OUR NEW ADDRESS WILL BE

P. O. BOX 88
RUTHERFORD, NEW JERSEY

Sincerely

MARIA BARRITT

Morning Skies for July-August-September



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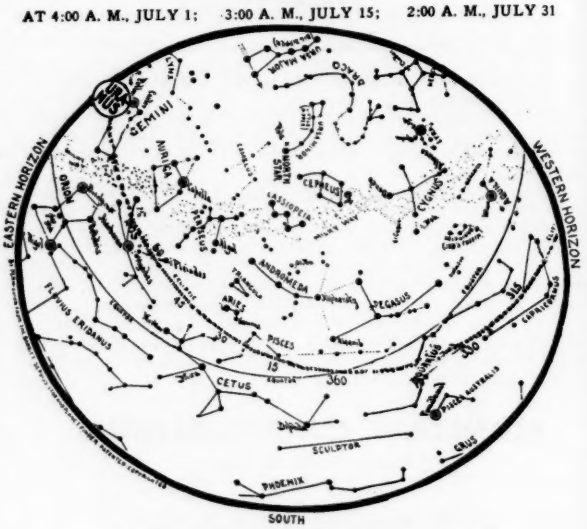

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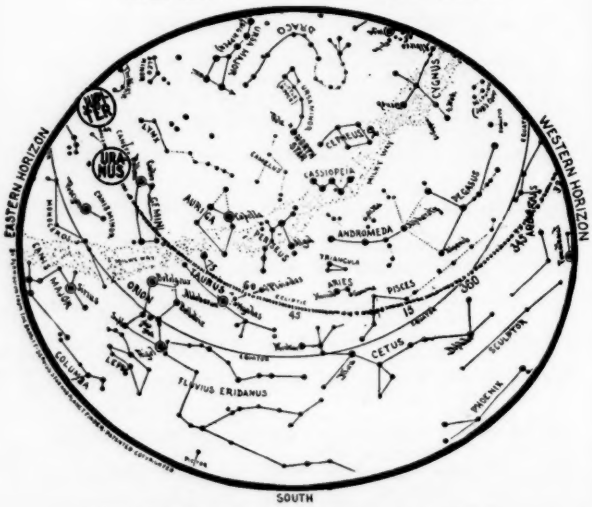

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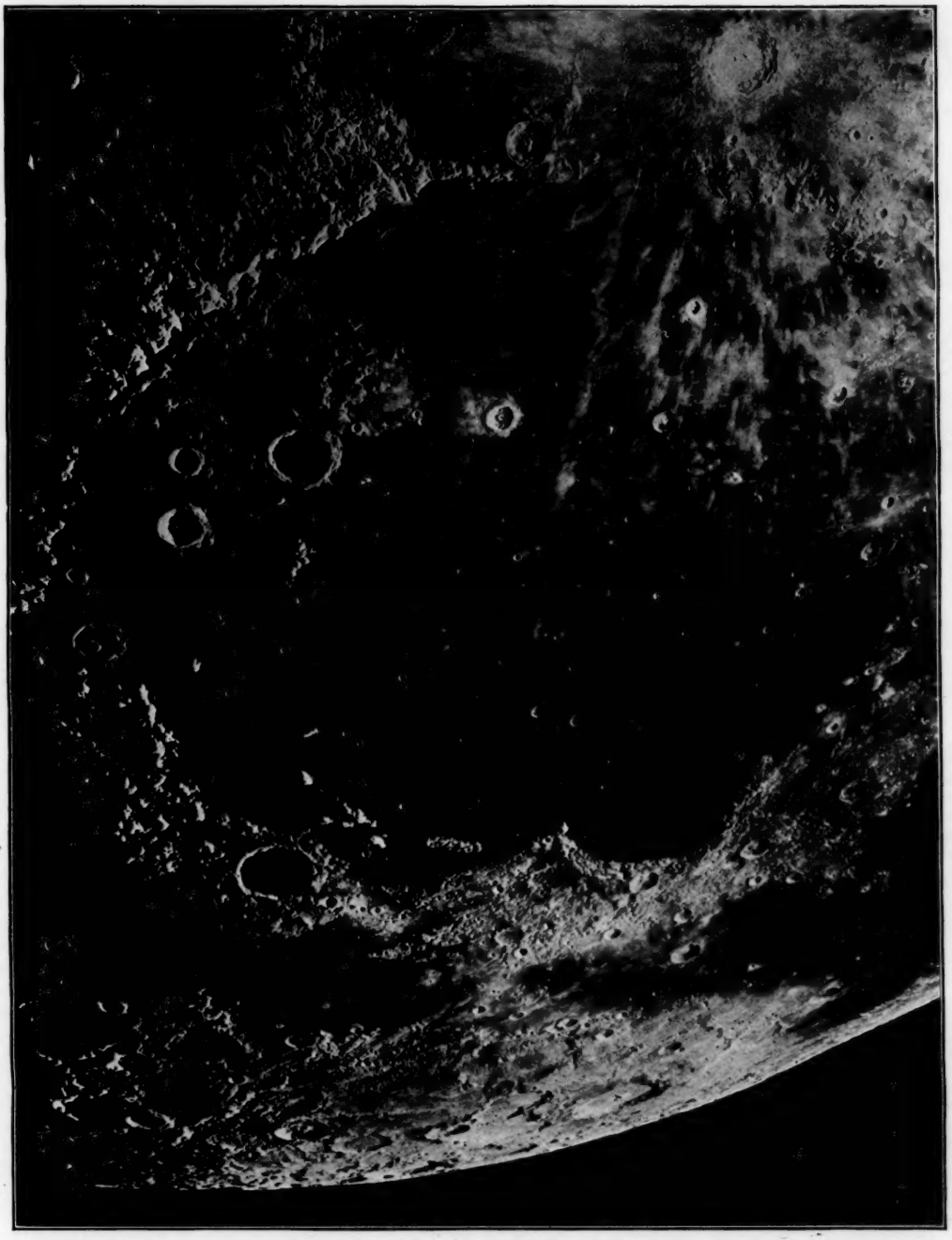
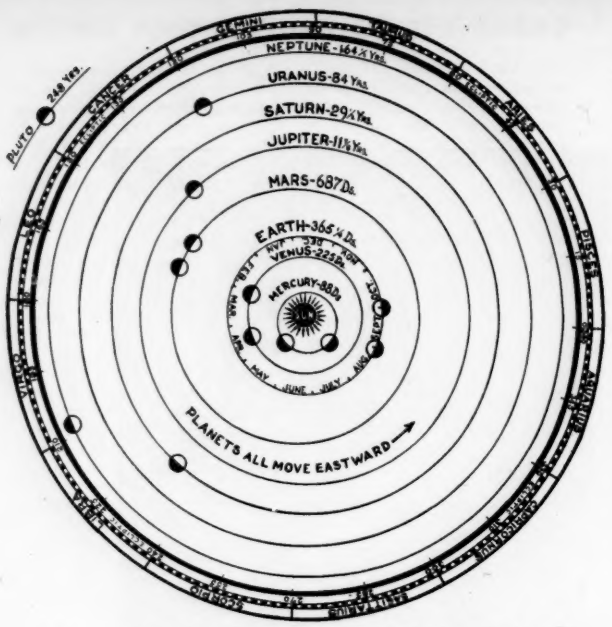


NORTH EAST QUADRANT OF THE MOON

Made with the 101-inch Hooker Telescope at Mt. Wilson, California, by Prof. Francis G. Pease. Showing the Appenine Mountains (highest peak 21,000 ft.) sweeping diagonally across upper left side of picture, with crater Eratosthene (di. 37 ms: highest peak 16,000 ft.) at upper end of range, Copernicus (di. 56 ms: highest peak 16,000 ft.) beyond in upper right corner. Plato (di. 60ms: peaks 3,800 to 9,000 ft.) is conspicuous on lower left side of picture at the edge of the great circular plain, Mare Inbrium, the largest plain on the Moon. The three prominent craters forming a small triangle just above the center and to the left are (right) Archmides, (left) Autolycus, (Below) Aristillus.



Orbits and Heliocentric Movements of the Planets for September

AMATEUR'S FORUM

By IRVING L. MEYER, M.S.

SEPTEMBER 1955

THE SUN: crosses the equator, moving south-eastwardly from Leo into Virgo. Distance decreases from 93.8 to 93.0 million miles, during the month.

THE MOON: on the 9th is at perigee (nearest the earth) at a distance of 230,000 miles, and on the 23rd is at apogee (farthest) at a distance of 251,000 miles.

The Moon's Phases (E.S.T.):

Full Moon	September	2 at	2:59 AM
Last quarter		9 at	2:59 AM
New Moon		16 at	1:19 AM
First quarter		23 at	10:40 PM

MERCURY: becomes observable in the evening sky for about a week around the 18th, on which date it reaches greatest elongation from the Sun. Since this planet can never be far from the Sun, as seen from the earth, it is always poorly placed for naked-eye observation, in the twilight zone. On the 18th it will appear considerably brighter than a standard first magnitude star; in the telescope, moderate power will reveal its 7" diameter disc, which will appear slightly more than half illuminated. It can be seen readily in broad daylight, if a circle-equipped telescope is available. Distance the 1st is 112 million miles, and the 30th is 73 million miles. In Virgo all month.

VENUS: is in superior conjunction with the Sun on the first and enters the evening sky. It is too close to the Sun all month to be observable. It moves frmm Leo into Virgo. Geocentric distance is now diminishing—from 160 million miles the 1st, to 158 million miles the 30th.

MARS: is in the morning sky all month and travels from Leo into Virgo. It is too close to the Sun to be observable. Like Venus, its distance is commencing to decrease! this month from 248 to 243 million miles.

JUPITER: in Leo in the morning sky, is too close to the Sun for satisfactory observation, but toward the close of the month can be detected low in the east just before sunrise. Its distance the 15th is 572 million miles.

SATURN: now sets only a few hours after the Sun. In Libra in the evening sky, it is no longer well placed for observation. It is 972 million miles away the 15th.

URANUS: is in the morning sky, in Cancer, and is about the best placed planet for observation. This is an unusual month in that all the major planets are grouped close to the Sun and accordingly are difficult or impossible to observe. Uranus is faint—on the borderline of naked eye visibility. It is 1787 million miles away the 15th.

NEPTUNE: is in the evening sky in Virgo, but is to close to the Sun for worthwhile observation. It is an eighth magnitude object. Distance the middle of the month is 2892 million miles.

PLANETARY CONFIGURATIONS

Eastern Standard Time

SEPTEMBER 1955

Sept. 1—	2:00 AM	Superior conjunction, Venus and Sun; north 1° 24′
6—	4:00 AM	Venus greatest heliocentric latitude north
9—	5:00 AM	Mercury in aphelion
12—	9:04 AM	Conjunction, Uranus and Moon; Uranus north 3° 49′
12—	10:00 PM	Mars in aphelion
13—	6:49 PM	Conjunction, Jupiter and Moon; Jupiter north 5° 13′
15—	11:25 AM	Conjunction, Mars and Moon; Mars north north 6° 35′
16—	2:46 PM	Conjunction, Venus and Moon; Venus north 6° 53′
18—	6:57 AM	Conjunction, Mercury and Moon; Mercury north 1° 48′
18—	11:00 AM	Mercury greatest elongation east, 26° 33′
18—	8:21 PM	Conjunction, Neptune and Moon; Neptune 6° 4′
20—	11:06 AM	Conjunction, Saturn and Moon; Saturn north 4° 56′
23—	2:42 PM	Sun enters Libra; Equinox
29—	Noon	Mercury greatest heliocentric latitude north

SEPTEMBER EVENING SKIES

The Milky Way, that wonderful combination of stellar worlds that seems to enfold our solar system in a mighty belt, is now seen sweeping from the northeast to the southwest across the sky. Here are uncountable millions of stars blending together which in the most powerful telescopes yield only clustering millions on beyond.

The splendid constellation of the Northern Cross, Cygnus (The Swan), is east of Lyra, in the Milky Way. Albireo, the star at the foot of the cross, is one of the most beautiful doubles in the heavens, and is visible in a field glass. Sixty-one Cygni, long known as the nearest star forming the eastern arm of the cross. Its position is shown on the map.

The star Deneb, at the top of the cross, is approaching the earth at the rate of thirty-six miles per second, and it was calculated by Newcomb, that eventually it would be so near as to outshine for several thousand years every visible star.

South of Cygnus is Aquila (the Eagle), which is distinguished easily by three stars in line with each other, the central one, Altair, is nearly of the first magnitude and quite red in color. To the east of Aquila is a very pretty group of stars known as Delphinus (the Dolphin). The northern most star is a fine double. This constllation is commonly known as "Job's Coffin."

Andromeda and Pegasus are well above the eastern horizon this month. The most interesting object in Andromeda is the Great Nebula, whose position is also shown on the map. It is easily distinguishable with an opera glass and on a good clear evening is a naked eye object, appearing as a faint cloud-like body. In August, 1885, a new star blazed forth in this nebula, but faded to invisibility the following year.

Capricornus (the Goat), is noted by Chinese Astronomers as the constellation in which five planets were in conjunction in the year 2449 B.C. Alpha Capricornus is an easy double for an opera glass.

The Great Star Cluster in Hercules, one of the most remarkable in the heavens, containing (it was estimated by Sir William Herschell) fourteen thousand stars, but in fact uncountable, can now be found with an opera glass as a small nebulous body on a line between Eta and Zeta Herculis, and about one-third the distance from the former. In a large telescope it presents a simple indescribable appearance.

The circular formation of stars west of Hercules is

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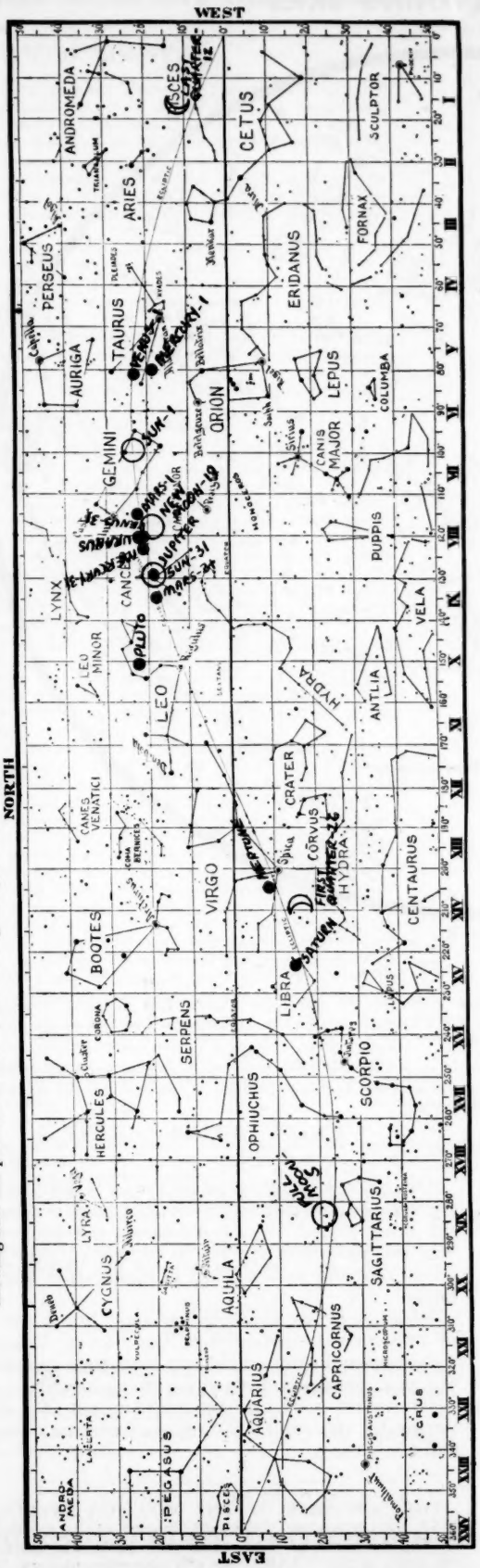
Showing also the position of the Sun at the beginning and ending of the month and the position of the Moon at its several phases.



one of the few contellations that bears a title suggestive of its appearance—a crown, the Northern Crown (Corona Borealis). Once seen, it will be easily remembered.

Arcturus the beautiful first magnitude star is now low in the northwest and will drop below our horizon the last of the month, while over in the northeast Capella, a rival bidding for our admiration, is coming above the horizon and soon will be finally in view. Capella is a double star.

Cassiopeia, a striking constellation consisting of five stars forming a letter "W" with the upper side toward the pole, is now swinging up from the east and will be on the meridian about midnight. While this formation presents a somewhat elongated "W," yet it clearly represents the letter, and presents a key by which it can always be readily distinguished.

The Great Dipper is now finely placed for observers having small telescopes, who will find the second star in the handle of the Dipper an easy double.

RIGHT ASCENSION AND DECLINATION

Right ascension is the same as longitude in terrestrial map making, and is used in the same manner to locate the distance of heavenly bodies from the Celestial Greenwich, that is the "first point of Aries" eastward 300 degrees.

The difference between these two terms is only in the way they are applied, in "Right Ascension" the degrees are numbered, eastward, consecutively to 360, making the complete circumference of the globe or heavens back to the starting point.

Terrestrial longitude is measured from Greenwich 180 degrees east and 180 degrees west, making 360 degrees.

So a heavenly body may have any right ascension up to 360 degrees, but no place on the earth can be more than 180 degrees east or west of Greenwich.

Declination like latitude, is measured both north and south from the equator to the poles, 90 degrees in either direction.

THE NAMES OF THE MONTHS

The names of the months are Latin in their origin. The particular derivation of each name is as follows: January, in honor of Janus, who presided over the beginning of everything; February, from the word "febu," to purify; March, from the name of the god of war, Mars; April, from "aperio," to open, because that is the month when the buds shoot forth; May, from the name of the goddess Maia, mother of Mercury, to whom sacrifices were offered the first day of this month; June, from the name of the Queen of the gods, Juno; July named by Marc Antony in honor of Julius Caesar, who was born in this month; August, named by Augustus Caesar in honor of himself, because in this month he celebrated three distinct triumphs, reduced Egypt to subjection, and put an end to civil war (in Gaul and the more remote parts of the Roman Empire the month was known by its ancient name of Eaust or Aust, the word for harvest); September, October, November, December, the seventh, eighth, ninth, and tenth months (named from the Roman numerals), so called because previous to the addition of January and February by Nunia in 713 B.C. the calendar year began with March.

NOTICE

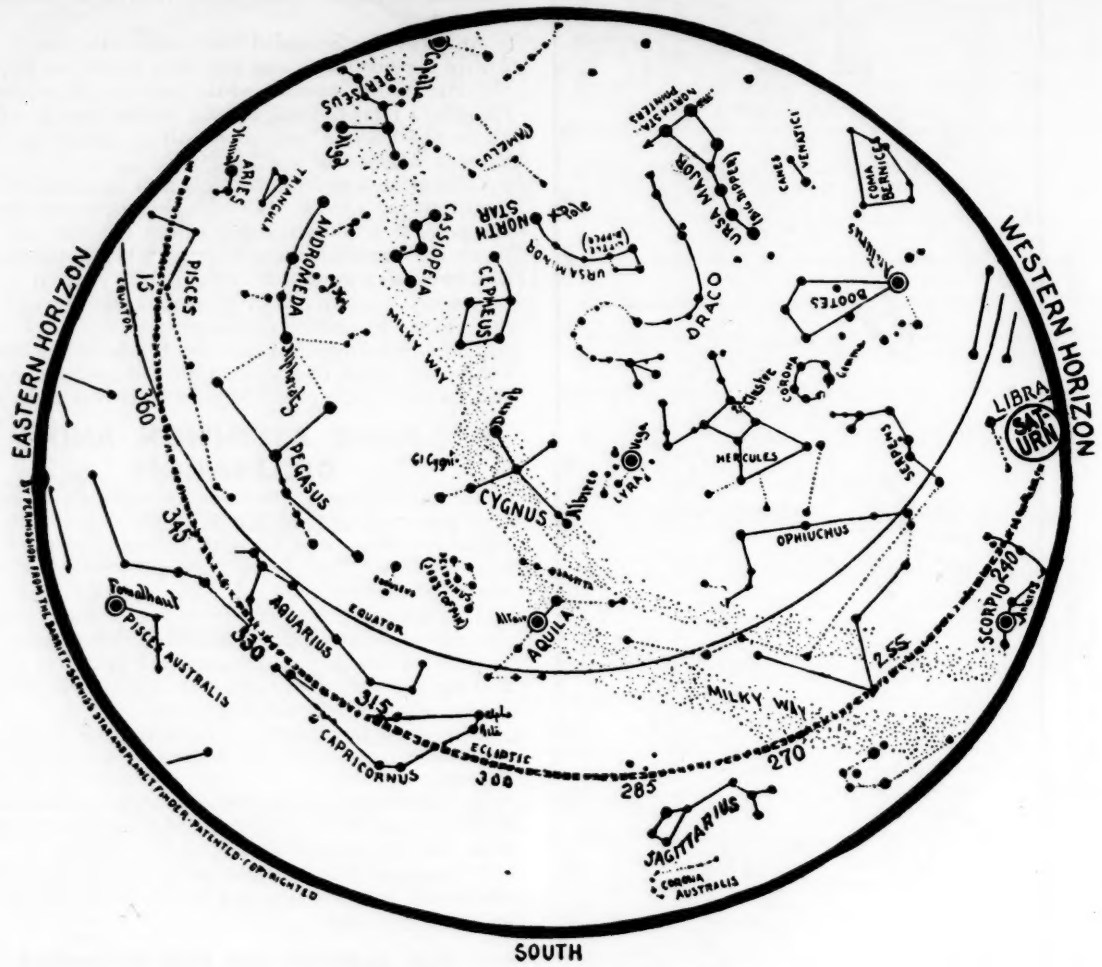
Evening Sky Map subscribers will confer a great favor when sending in requests to have their addresses changed, if they will give the old addresses as well as the new.

Thank you,

M. Barritt

XUM

SEPTEMBER EVENING SKIES



AT 9 P.M., SEPT. 1; 8 P.M., SEPT. 15; 7 P.M., SEPT. 28

Face South and Hold the Map Overhead. The Top North and You Will See the Stars and Planets Just as They Appear in the Heavens. The Arrow Through the Two Stars in the Bowl of the Big Dipper Points to the North Star. The Star at the End of the Little Dipper.

This map is arranged specifically for Latitude 40 North—New York—but is practical for ten or fifteen degrees north or South of this latitude anywhere in the United States, the southern portion of Canada and the northern portion of Mexico and for corresponding latitude in Europe.

EQUINOCTIAL STORMS

The month of September brings in its train the first touch of cold weather and frost, and the so-called "equinoctical storms." The sun "crosses the line" on September 23, the autumnal equinox, and summer is astronomically at an end.

The seasonal change of weather generally brings about that time a violent storm, with its attendant disaster to shipping. As similar storms occur in March, while the sun is near the spring equinox, there has naturally, down through the centuries, grown up the impression that the sun's crossing the equator is directly responsible for these equinoctical storms.

Nothing more absurd could be imagined. The equator in the sky is as imaginary a circle as the equator on the earth. In fact, the celestial equator is simply the plane of terrestial circle produced out to the heavenly sphere.

One travelling at sea never knows when he is crossing the equator unless the navigator makes astronomical observations for the purpose, and in a similar way the time that the sun is on the equator can be found out only as the result of observation and calculation.

Weather is not made on the spot, but is the result of influences spreading over large areas. Changes in the moon and spots on the sun have been the phenomena most generally blamed for changes in the weather —but as yet without scientific success. To explain storms by the sun's crossing an imaginary line is a still farther cry.

THE PUBLISHER OF THE MONTHLY EVENING SKY MAP will appreciate the kindly interest of its subscribers in sending the names of those whom they think to be interested in the study of the "STARS," we will take great pleasure in sending them sample copies.

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Astronomers have two sources of data from which to compute Local Sideral Time, The American Ephemeris, published at Washington ($3.75) Superintendent of Documents and The Observer's Handbook, a small volume published by the Royal Astronomical Society of Canada, 3 Willcocks St., Toronto, 60 cents. Greenwich Sideral Time in the Ephemeris pages 2 to 16 and in the Handbook on page 7.

Local Sideral Time which is required in the observatory can be computed from two formulas published in advertising in The Monthly Evening Sky Map and the Observer's Handbook or will be sent to any address upon request and with an example worked out for that location free of charge. Information in the method of using Sideral Time will also be sent free.

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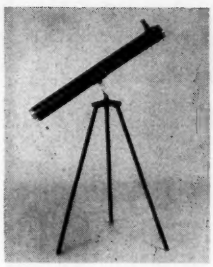

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Dear Miss Makin:

Replying to your question: "What is the difference between a double star and a binary star?"

The term double star is used for any two stars which appear very close together in the sky even though the two may have no relation to each other, one being much farther away than the other and only by chance lying upon the same sight line from the earth. If the two components of a double star are connected in their motions so as to form a system of two suns then we refer to them as a binary.

M. BARRITT.

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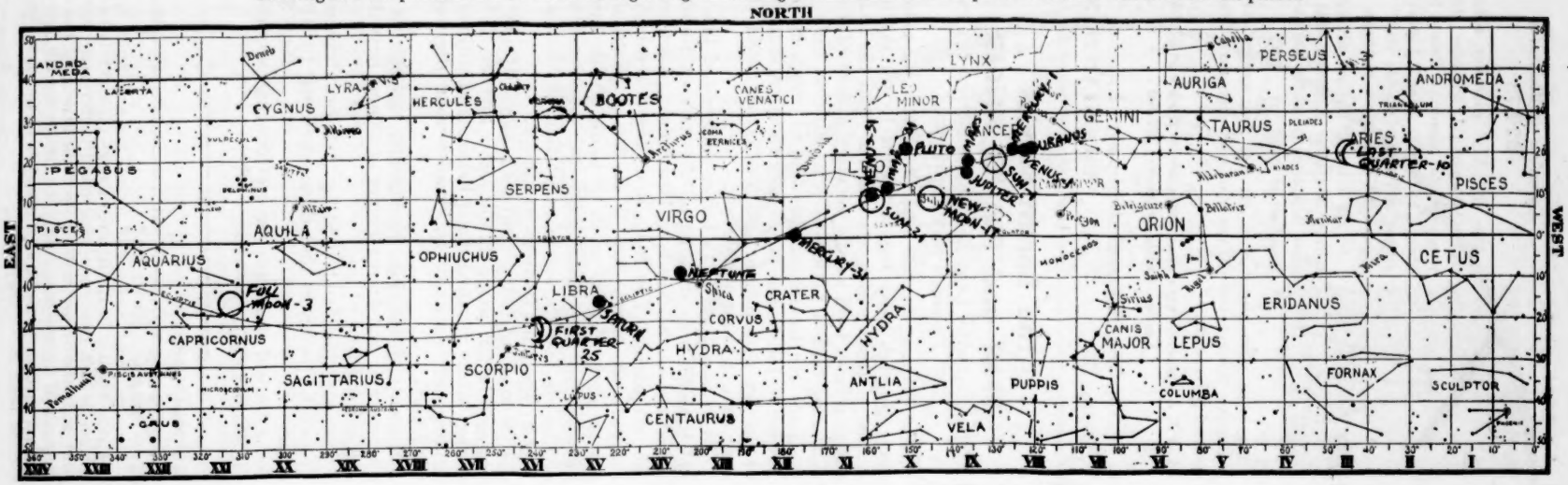
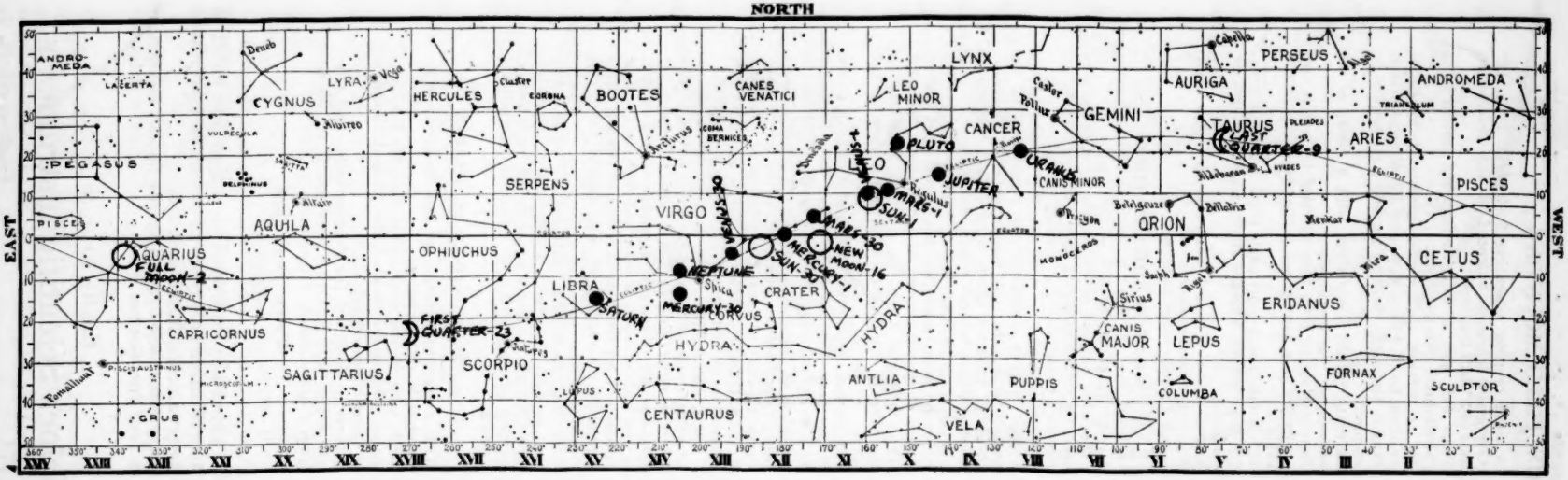
Showing also the position of the Sun at the beginning and ending of the month and the position of the Moon at its several phases.





Nov. 5 Oct. 22 Oct. 5 Sept. 20 Sept. 5 Aug. 20 Aug. 5 July 20 July 5 June 20 June 5 May 20 May 5 Apr. 20 Apr. 5 Mar. 20 Mar. 5 Feb. 18 Feb. 2 Jan. 20 Jan. 5 Dec. 20 Dec. 5 Nov. 20

THE DATE BELOW EACH NUMERAL WILL SHOW WHEN THAT SECTION OF THE MAP WILL BE ON THE MERIDIAN—DUE SOUTH—AT 9 P.M. OR AN HOUR EARLIER FOR EACH NUMERAL WEST OF THIS DATE AND AN HOUR LATER FOR EACH NUMERAL EAST.